



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/695,949

10/30/2003

Steve Crane

7370/80860

6252

42798 7590 11/28/2007  
FITCH, EVEN, TABIN & FLANNERY  
P. O. BOX 18415  
WASHINGTON, DC 20036

EXAMINER

DANIELS, MATTHEW J

ART UNIT

PAPER NUMBER

1791

MAIL DATE

DELIVERY MODE

11/28/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.



## **DETAILED ACTION**

### ***Election/Restrictions***

1. This application contains claims 1 and 10 drawn to an invention nonelected with traverse in the reply filed on 9 February 2007. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. **Claims 21-27, 29-37, and 39** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In Claim 21, "said injection position" and "said employed position" lack antecedent basis. Other claims are rejected by dependence.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. **Claims 21-23, 26, 27, 29-32, 34, 35, 39** are rejected under 35 U.S.C. 103(a) as being unpatentable over Clarke (USPN 2140735) in view of Hynes (USPN 1245233). **As to Claim 21**, Clarke teaches an injection head for ejecting a flowable substance (oil), comprising:

a housing (Fig. 1, item 19) including a chamber defined within at least a portion of the housing (cross section, Fig. 2), the chamber having a supply port (Fig. 2, item 21), a purge port (Fig. 2, item 23), and an outlet (Fig. 2, item 22) spaced along the housing in a longitudinal direction (Fig. 2);

an actuator (Fig. 2, items 43, C, 35, 33, 34, 31, 32, 28, 29, 30); and

an injection spindle slidably retained within the chamber between an ejection position and a deployed position (Fig. 2, item 37); and

wherein the injection spindle has a diameter smaller than that of the chamber (Fig. 2, item 37) and is provided with respective larger diameter portions adjacent its two ends (Fig. 2, items 38, 39), with the larger diameter portions forming respective seals with walls of the chamber to enclose a space between the two larger diameter portions (Fig. 2); wherein a plug for blocking the outlet is disposed within the chamber at an end of the spindle opposite that connected to the actuator (Fig. 2, item 39); and

wherein in said injection position, the two larger diameter portions of the spindle are positioned to connect the supply port with the outlet and seal off the purge port from both the supply port and the outlet (2:16, "the port 27 is closed"); and

wherein in said employed position, the two larger diameter portions are positioned to connect the purge and supply ports and to cause the plug to block the outlet (as shown Fig. 2).

Clarke does not specifically teach (a) the actuator is "connected" to the housing, or (b) that the injection spindle is connected to the actuator.

However, Hynes teaches an actuator (item 39, Fig. 3) which is (a) connected to the housing (see screw, item 44, Fig. 3) and (b) connected to the spindle (Fig. 3, item 35).

It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the actuator of Hynes into that of Clarke because (a) Clarke suggests that control means should be provided to move the valve spindle (Fig. 2, item 37), and the solenoid of Hynes is a known and conventional control means, (b) the actuator of Hynes would electrically regulate flow, which would be desirable in the device of Clarke to provide improved flow control, and (c) the solenoid of Hynes is a known actuator which one of ordinary skill could have substituted for the actuator of Clarke merely by removing the actuator of Clarke and attaching the actuator of Hynes on the end to provide the predictable result that the flow to either the purge or outlet would be electrically controlled, rather than hydraulically or pneumatically.

**As to Claims 22-23**, Hynes teaches that fasteners, including a threaded collar (30) are known.

**As to Claim 26**, the combination of Clarke with Hynes provides the claimed configuration wherein the solenoid of Hynes is provided on the right side of Clarke's Fig. 2, and wherein the solenoid is disposed opposite the outlet, and the purge port is disposed between the supply port and the solenoid (23 operates as a purge port, 21 operates as a supply port). **As to Claim 27**, the supply port is disposed between the purge port and the outlet (22 operates as outlet). **As to Claims 29-32, 34, and 35**, it is submitted that Clarke's plug (39) is removable and releasably

retained within the chamber and disposed at the end of the injection spindle when the injection spindle is in the ejection position (Fig. 2). Additionally, it is generally found to be prima facie obvious to make parts separable (or removable). See MPEP 2144.04(V)(C). In doing so, it would have been prima facie obvious to provide a complementary shaping between the spindle and the plug. In the method of Clarke, the plug is a disk shaped object which seals the outlet of the chamber (Fig. 2, items 39, 26, 22). In the alternative, Hynes provides a plug that is removable, and releasable, the spindle has an end shaped to complement the plug, it is slidably retained within the chamber and positioned at the outlet in the deployed position (Fig. 3). It further seals the outlet of the chamber. **As to Claim 39**, in one configuration (not shown in Fig. 2) Clarke teaches that the larger portions of the spindle are disposed between the supply port and the solenoid and wherein one of the portions is between the supply and outlet and the other is between the purge port and solenoid when in its alternate position, whereby communication takes place between ports via the enclosed space between the larger portions of the spindle (Fig. 2).

4. **Claims 22-24** are rejected under 35 U.S.C. 103(a) as being unpatentable over Clarke (USPN 2140735) in view of Hynes (USPN 1245233), and further in view of Gaubatz (USPN 2806075). Clarke and Hynes teach the subject matter of Claim 21 above under 35 USC 103(a). **As to Claims 22-24**, Clarke is silent to the claimed fastener which includes a threaded collar and a locking groove and flange. However, Clarke clearly suggests that there should be a connection made with the outlet (Fig. 1, item 49). Gaubatz teaches that thermocouples are desirably provided with fasteners at their distal end, the fastener including both a threaded collar (Fig. 2,

item 24) and locking groove and flange (Fig. 2, item 111). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the fasteners of Gaubatz into the apparatus of Pinney because (a) it would require only one nut, which would increase the speed of assembly or disassembly, and (b) the only difference between the claimed invention and the prior art is the use of a particular connector. However, Gaubatz teaches that the claimed connector is known, and one of ordinary skill could have substituted the Gaubatz connection for that of Clarke to provide the predictable benefit that a connection could be made by threads, instead of by welding.

5. **Claims 25 and 37** are rejected under 35 U.S.C. 103(a) as being unpatentable over Clarke (USPN 2140735) in view of Hynes (USPN 1245233), and further in view of Eberhart (USPN 3695149). Clarke and Hynes teach the subject matter of Claim 21 above under 35 USC 103(a). As to **Claims 25 and 37**, Clarke teaches that a tube is present between the wall of the chamber and the spindle and is provided with respective openings to correspond to the supply and purge ports (Fig. 2, item 25-27, 40). Clarke, however, is silent to a "low friction" material. However, Eberhart teaches that for reciprocating members operating under adverse conditions (Abstract), it is known to provide a coating, which is also interpreted to be a tube, of low friction material to the inside surface of a chamber (Fig. 2, item 30) or to the surface of the ram or spindle (Fig. 1, items 20, 22, 26, 44). Additionally, Eberhart teaches sleeve bushing (Fig. 3, item 36), which is also interpreted to be a tube of low friction material. It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the apparatus of

Eberhart into that of Clarke (a) in view of Clarke's teaching to use a tube (40) and (b) in order to reduce the friction between the sliding surfaces, which would provide increased lifetime.

6. **Claim 33** is rejected under 35 U.S.C. 103(a) as being unpatentable over Clarke (USPN 2140735) in view of Hynes (USPN 1245233), and further in view of Barber (USPN 3015227). Clarke and Hynes teach the subject matter of Claim 29 above under 35 USC 103(a). **As to Claim 33**, Clarke and Hynes are silent to the sphere. However, spherical sealing elements are known from Barber, who teaches a sealing element in the shape of a sphere (Fig. 2, item 27) regulating flow between three ports (items 23, 32, 26). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the apparatus of Barber, namely the spherical plug, into the apparatus of Clarke because Barber teaches that plugs are used interchangeably with spherical plugs (Fig. 2, item 27), and the spherical plug would provide a better seating action than plug of Clarke. One of ordinary skill could have substituted the plug of Barber for that of Clarke simply by relocating the outlet to the bottom of the chamber and replacing item 39 with a sphere. The result would have been predictable, namely that a spherical plug would fit with the outlet, eliminating flow.

7. **Claim 36** is rejected under 35 U.S.C. 103(a) as being unpatentable over Clarke (USPN 2140735) in view of Hynes (USPN 1245233), Eberhart (USPN 3695149), and further in view of Stoss (USPN 4741364). Clarke, Hynes, and Eberhart teach the subject matter of Claim 25 above under 35 USC 103(a). **As to Claim 36**, Clarke is silent to the edge at the outlet with a seal retained in the engaging formation. However, Stoss teaches the tube including an edge at an



outlet with an engaging formation and a seal retained within the engaging formation (Fig. 1, see o-ring below item 42 in the lower left of the chamber). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the o-rings of Stoss into the apparatus of Clarke because the seal of Stoss is a substitutable sealing mechanism that one of ordinary skill in the art could have incorporated by machining a ring into the tube of Clarke and placing a seal within the groove in order to provide the predictable result that the tube would seal more thoroughly.

8. **Claim 38** is rejected under 35 U.S.C. 103(a) as being unpatentable over Pinney (USPN 3985300) in view of Hynes (USPN 1245233), and Alanko (USPN 5665301). **As to Claim 38**, Pinney teaches an apparatus comprising an injection head (Fig. 1) releasably connected (Fig. 1, item 19) to an injection port capable of injecting a flowable substance into a closed mold, including a housing (everything between items 19 and 13 in Fig. 3) with a chamber (everything between items 13, 11, and 12 in Fig. 3) having a supply port (2:55), a purge port (2:47), and an outlet (Fig. 3, item 13), and an injection spindle slidably retained within the chamber between an ejection position and deployed position (Figs. 1 and 2);

Pinney is silent to (a) the base mold, soft tool formed as a sheet having an outer edge, a seal formed at the outer edge and connected in sealing arrangement with a base mold to form a closed mold, a vacuum channel formed at the outer edge of the sheet and spaced inwardly of the seal, and at least one injection port disposed in the sheet, and (b) an actuator.

However, these aspects of the invention would have been prima facie obvious for the following reasons:

a) Alanko teaches the base mold (Fig. 1, item 1), soft tool formed as a sheet having an outer edge (Fig. 1, item 3), a seal formed at the outer edge (Fig. 1, items 6, 7) and connected in sealing arrangement with a base mold to form a closed mold (Fig. 2), a vacuum channel formed at the outer edge of the sheet and spaced inwardly of the seal (Fig. 1, item 8, 10), and at least one injection port disposed in the sheet (Fig. 1, item 9).

b) Pinney clearly teaches that the valve stem (equivalent to the spindle) is controlled by known means (2:29). Thus, Pinney suggests that control means for producing the movement of item 20 is conventional. However, Pinney is silent to an actuator, and that the actuator is connected to the housing. Hynes teaches an actuator (item 39, Fig. 3) connected to the housing (see screw, item 44, Fig. 3).

It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the apparatus of Alanko and the apparatus of Hynes because (a) it would be desirable to use Pinney's injection valve to inject into a chamber or mold, such as that of Alanko, particularly in view of Pinney's suggestion to inject into a polymerization vessel (1:9) and (b) Pinney suggests that a known control means should be used (2:29-30), and the solenoid of Hynes is a known and conventional control means, and the actuator of Hynes would electrically regulate flow, which would be desirable in the device of Pinney.

### ***Response to Arguments***

9. Applicant's arguments filed 14 August 2007 have been fully considered but they are not persuasive. The arguments appear to be on the following grounds:

- a) Claim 21 now more specifically defines the structure of the spindle, which are not found in the Pinney patent.
- b) Dependent claims are believed to be patentable based on their dependence on Claim 21.

10. These arguments are not persuasive or are moot for the following reasons:

- a) Claim amendments necessitated additional search and consideration. See the new rejection above under 35 USC 103(a).
- b) Dependent claims are maintained as unpatentable for the reasons set forth above.

### *Conclusion*

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Application/Control Number:  
10/695,949  
Art Unit: 1791

Page 11

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew J. Daniels whose telephone number is (571) 272-2450. The examiner can normally be reached on Monday - Friday, 8:00 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on (571) 272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MJD 11/25/07

*MJD*

*ca*  
CHRISTINA JOHNSON  
SUPERVISORY PATENT EXAMINER

*11/20/07*